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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,285	09/25/2006	Christoph Briehn	WAS0807PUSA	6497

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EXAMINER
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PAK, HANNAH J

ART UNIT	PAPER NUMBER
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1764

MAIL DATE	DELIVERY MODE
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06/01/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/599,285	<b>Applicant(s)</b> BRIEHN ET AL.	
	<b>Examiner</b> HANNAH PAK	<b>Art Unit</b> 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11, 12, 15-18 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-12, 15-18, and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/04/2010 has been entered.

### ***Response to Amendment***

2. The applicants amended claim 1 to include limitations that are supported by page 8, lines 24-30, page 11, lines 15-20, page 14, lines 17-29, and page 5, line 9, of the specification as originally filed. The applicants also amended claim 12 to limit the particles to only pyrogenic silica, which is supported by page 8, line 29, of the specification as originally filed. The applicants further added new claim 22, which is supported by page 12, lines 14-29, of the specification as originally filed.

### ***Claim Objections***

3. Claim 1 is objected to because of the following informalities:

As to claim 1, R<sup>1</sup> of Si-OR<sup>1</sup> should be defined in claim 1 as on page 5, lines 24-32, of the present specification.

Moreover, the terms “methacrylomethyltrimethoxysilane” and “methacrylomethyldimethylmethoxysilane” recited in claim 1 should be consistent with the spelling on page 11, lines 17-18, of the present specification.

Appropriate corrections are required.

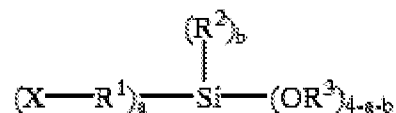
### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 11, 15-18, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (US 6,306,502).

Fukushima et al. disclose a curable coating composition capable of forming an abrasion resistant coating and articles cover with such coating (Col. 1, lines 5-15). The curable coating composition taught by Fukushima et al. comprises among other things, a curable silicone prepared by chemically modifying particulate colloidal silica in an alcohol solvent (SiOH) (Col. 3, lines 10-15 and Col. 4, lines 10-25) with a radical polymerizable silane compound or its hydrolysis product represented by the following general formula:



wherein X is  $CH_2=C(CH_3)-COO^-$ ,  $R^1$  is an alkylene group with 0-8 carbons,  $R^2$  and  $R^3$  are alkyl groups with 1-8 carbons, a is a positive integer of 1-3 and b is a positive integer of 0-2 (Col. 3, lines 10-32), thus embracing the claimed  $\alpha$ -organosilane, i.e., methacryloyloxymethyltrimethoxysilane. Although Fukushima et al. do not specifically mention the functional particles defined by formula I recited in claim 11, there is reasonable basis to conclude that the functional particles suggested by Fukushima et al. include the functional particles defined by the claimed formula since Fukushima et al.'s functionalized particles are formed from among other things, the claimed ingredients (see MPEP § 2112 [R-3], V).

In addition, this curable coating composition also contains a polyfunctional methacrylate component corresponding to the claimed binder bearing at least one ethylenically that is polymerizable via ultraviolet-induced (actinic radiation or thermal treatment) polymerization (Col. 4, line 56-Col. 5, line 4 and Col. 8, lines 10-16). Fukushima et al. also disclose employing a photo-polymerization initiator (Col. 3, lines 59-60) as required by claim 22. Fukushima et al. further disclose applying such coating composition onto a surface of a variety of synthetic resin molded substrate and then curing it with ultraviolet radiation energy (Col. 12, lines 42-65 and Col. 1, lines 10-15) corresponding to the claimed process for coating a substrate.

Fukushima et al. do not specifically mention the claimed colloidal silica particles having an average diameter of less than 1000 nm.

However, Fukushima et al. do disclose using colloidal silica particles having a particle size of 1-200  $\mu\text{m}$  (equivalent to 1,000-200,000 nm) (Col. 3, lines 29-31), which touches the claimed range of 1,000 nm or less. Fukushima et al. further disclose that that their colloidal silica particles, like the applicants, are used to improve the abrasion resistant property in a curable coating composition (Col. 4, lines 33-45).

Given the above teachings, it would have been obvious to one of ordinary skill in the art to employ the colloidal silica particles having among other things, suitable particle sizes, in the curable coating composition taught by Fukushima et al., with a reasonable expectation of successfully improving the abrasion resistant property of such composition (*See MPEP § 2144.05*).

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (US 6,306,502) as applied to claims 11, 15-18, and 22 above, and further in view of van Tao et al. (US 4,624,971).

The disclosure with respect to Fukushima et al. in paragraph 4 is incorporated here by reference. Although Fukushima et al. do disclose using colloidal silica in their curable coating composition suitable for coating substrates, they do not specifically mention the claimed pyrogenic silica.

Nevertheless, van Tao et al. teach it is known to employ silica either in the form of pyrogenic or colloidal in a curable coating composition useful for coating substrates (Col. 2, lines 15-40).

Given the above teachings, it would have been obvious to one of ordinary skill in the art to use either pyrogenic silica or colloidal silica taught by van Tao et al., in the curable coating composition of the type discussed in Fukushima et al., with a reasonable expectation of successfully using it for coating substrates.

### ***Response to Arguments***

6. Applicants' arguments filed 10/04/2010 have been fully considered but they are not persuasive for the reasons set forth below:

#### **(A)**

Applicants' Argument: While applicants acknowledge that the silanes used in functionalizing their silica and silicone resins are within the general formula disclosed by Fukushima et al., Fukushima et al. did not name or exemplify the claimed organosilane (Pages 5-6 of the Applicants' Remarks). Thus, the applicants argue that Fukushima would have not suggested the claimed organosilane used to form their functionalized particles defined by the claimed formula 1.

Examiner's Response: However, this argument is not well taken. While it is true that Fukushima et al. do not exemplify or specifically name the claimed organosilanes, they do disclose a general formula embracing a limited number of organosilanes, including the claimed organosilane (i.e., methacryloyloxymethyl trimethoxysilane), with an

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example of methacryloyloxyethyl triethoxysilane (see Col. 5, line 11 of Fukushima et al.), which is structurally similar to the claimed methacryloyloxymethyl trimethoxysilane. Thus, contrary to the applicants' argument, Fukushima et al. would have suggested one of ordinary skill in the art to employ the claimed organosilane to form functionalized particles within the claimed formula I.

**(B)**

Applicants' Argument: The applicants contend that Fukushima does not teach modifying their silica to achieve a superior coating, i.e., excellent scratch-resistant coating, but instead Fukushima et al. focus on modifying the resin system to improve the coating (Pages 6-7 of the Applicants' Remarks).

Examiner's Response: However, the applicants' contention is not well taken. As long as some reason, motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the reference be combined for the reasons or problems contemplated by the inventor. See MPEP § 2141, III.

In determining obviousness, neither the particular motivation to make the claimed invention nor the problem the inventor is solving controls. The proper analysis is whether the claimed invention would have been obvious to one of ordinary skill in the art after consideration of all the facts.

Moreover, the property of excellent scratch-resistance of the coating composition is not recited in the claims, and thus, Fukushima et al. is not required to teach such specific property. In any event, like the applicants, Fukushima et al. disclose at Col. 4, lines 47-55 that by using a colloidal silica which has been chemically modified by the silane compound provides a greater compatibility with a polyfunctional methacrylate



component, leading to a cured coating with improved abrasion (scratch) resistance, weather resistance, and durability.

**(C)**

Applicants' Argument: The applicants contend that the applicants satisfied the long felt need in the industry for scratch resistance coatings (see Page 6 of the Applicants' Remarks). In support of this contention, the applicants rely on the Rule 132 declaration filed 03/01/2010 to provide proof that the claimed coating was widely accepted as satisfying the long felt need in the industry for scratch resistant coating (see Pages 2-3 of Rule 132 declaration filed 03/01/2010).

Examiner's Response: However, the declaration provides no objective evidence that the claimed scratch resistant coating satisfied the long felt need in the scratch resistant coating industry. Specifically, the applicants have not shown wide acceptance of the claimed coating in the industry for scratch resistant coating industry. Nor does the declaration show that such long felt need was not satisfied by Fukushima before the claimed invention since Fukushima also provides abrasion (or scratch) resistant coating which includes functionalized particles having the claimed organosilanes and colloidal silica together with the binder (i.e., polyfunctional methacrylate). *See also MPEP § 716.02.*

**(D)**

Applicants' Argument: The applicants argue that their claimed invention imparts unexpected results (see Page 8 of the Applicants' Remarks). In support of this

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arguments, the applicants rely on the data shown in Rule 132 declaration filed 03/01/2010 as further support (see Page 8 of the Applicants' Remarks).

Examiner's Response: However, the applicants have not carried their burden of showing that the claimed subject matter imparts unexpected results relative to the closest prior art overcoming the prima facie case of obviousness established in the record. First, the applicants have not shown the claimed invention imparts unexpected results. While comparative example B supposedly representative of the prior art is said to show 24% loss of gloss at page 3 of the declaration, the applicants' own specification at page 17, Table 1 shows that examples 2 and 3 exhibit a loss of gloss of  $27 \pm 6\%$  and  $25 \pm 5\%$ . It is evident that the difference in loss of gloss percentage values between the comparative and inventive examples is so minimal that it cannot reasonably be deemed to be unexpected or surprising. Secondly, the applicants fail to compare the claimed invention with the closest prior art. As is apparent from Col. 5, line 11 of Fukushima et al., they disclose employing methacryloyloxyethyl trimethyloxysilane, which is structurally most similar to the claimed methacryloyloxymethyl trimethyloxysilane. Unlike Fukushima et al.'s methacryloyloxypropyl trimethyloxysilane employed in the comparative examples, the methacryloyloxyethyl trimethyloxysilane differs only by one methyl group as supposed to two methyl groups. Finally, the applicants have not shown why the limited showing in the examples from the declaration is reasonably commensurate in scope with the degree of protection sought by the broad claims of the instant application. While the examples are directed to a showing of two to three curable coating compositions comprising specific functional

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particles having only one type of particle, e.g., an aqueous SiO<sub>2</sub> sol manufactured from LUDOX AS 40 of Grace Davison, with a particular particle diameter of 22 nm, and a specific binder (i.e., hexanediol diacrylate), the claims are not so limited. The claims are broadly recite multifarious curable coating compositions comprising functionalized particles having particles of a metal oxide, metal-silicon mixed oxide, silicon dioxide, and organopolysiloxane resin with an average diameter of 1000 nm or less, and a binder bearing at least one ethylenically unsaturated group.

Accordingly, the applicants fail to rebut the prima facie case of obviousness established in the record.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HANNAH PAK whose telephone number is (571)270-5456. The examiner can normally be reached on Monday - alternating Fridays (7:30 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner  
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/HP/

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Supervisory Patent Examiner, Art Unit 1764